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10/727,636	12/05/2003	Keiichi Iwamura	00862.023349	9621

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EXAMINER	
MACKOWEY, ANTHONY M	
ART UNIT	**PAPER NUMBER**
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/727,636	IWAMURA ET AL.	
	Examiner	Art Unit	
	Anthony Mackowey	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 December 2003 and 07 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/29/04, 2/09/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claims 1, 2, 3 and 7 are objected to because of the following informalities:

Claims 1 and 7 contain a grammatical errors, reciting at lines 12-13, "are to be different each other."

Claim 2 contains a grammatical error reciting, "changes at least one of positions of the first to fourth outer shapes."

Claim 3 contains a grammatical error reciting, "changes at least one of sizes of the first to fourth outer shapes."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in

the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Although the Summary of the Invention (pages 2-5) essentially recite claims 1, 6, 7 and 8, the specification does not sufficiently describe how one of ordinary skill in the art how to embed or detect a digital watermark in a document image using a first extracted outer shape in a first line, a second extracted outer shape in a second line, a third extracted outer shape in a third line, and a fourth extracted outer shape in a fourth line. Embodiments disclosed in the Detailed Description of the Preferred Embodiments do not disclose the use of embedding and detecting using four lines. While they do describe use of four extracted outer shapes, the embedding and detecting described only utilizes two or three line, the specification does not provided embodiments wherein the each of the four extracted outer shapes are from four different lines. Examiner has made the best effort to understand the claims in view of the embodiments that are described in the detailed description and given the broadest reasonable interpretation of the claim language to conduct a reasonable search of the prior art.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 recites, "wherein the second and fourth outer shapes are outer shapes at an identical position. From the claim language it is unclear with regard to what reference, the second and fourth outer shapes are at identical positions. This is further

complicated by the lack of a detailed description in the specification regarding the use of four line as discussed in the rejection under 35 U.S.C. 112, first paragraph, above. Examiner inquires if the second and fourth outer shapes are at identical column and row positions (X-Y coordinates), column positions (X coordinates), or row positions (Y coordinates) of the document image?

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.
>
> When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare In re Lowry, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).
>
> In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 9 and 10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 9 and 10 define a program for

making a computer execute a digital watermark embedding/extraction method, thus embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed program can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

In this case, claims 11 and 12 depend from claims 9 and 10 respectively and define a computer-readable storage medium and are therefore statutory. Examiner suggests amending claims 9 and 10 as described above and canceling claims 11 and 12 or amending to incorporate the limitations of claims 9 and 10 into claims 11 and 12 and canceling original claims 9 and 10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3 and 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,086,706 to Brassil et al. (Brassil) in view of US 2004/0146199 to Berkner et al. (Berkner).

Regarding claim 1, Brassil teaches an apparatus for embedding a digital watermark in a document image (Fig. 2), comprising: extraction means for extracting a first line, a second line different from the first line, a third line and a fourth line, of characters in the document image (col. 4, lines 30-56; Fig. 7; col. 7, lines 38-45); and control means for controlling at least one of the lines so that a parameter between the first and second lines and a parameter between the third and fourth lines are to be different each other in correspondence with digital watermark information to be embedded (col. 4, lines 30-56; col. 7, lines 38-45, As taught by Brassil, the line shift coding results in the spacing (understood as a parameter) between lines 1 and 2 is greater than the spacing between lines 3 and 4.).

Brassil teaches the spacing between lines can be measured using the baselines (col. 9, or the centroids of the lines (col. 9, lines 6-67), however Brassil does not explicitly disclose an outer shape extracting means for extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; or a control means for controlling at least one of the outer shapes so that a parameter between the first

and second outer shape and a parameter between the third and fourth outer shapes are to be different each other in correspondence with digital watermark information to be embedded.

Berkner teaches segmenting text lines in a document and using bounding boxes (outer shape extractions) to measure the spacing between lines (page 6, paragraph 87).

The teachings of Brassil and Berkner are combinable because they are both concerned with image processing for formatting of document information. In view of the teachings of Berkner, it is evident that it is known in the art to calculate line spacing using bounding boxes (outer shape extractions) and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the watermark embedding apparatus taught by Brassil to include an outer shape extraction means for extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image in view of Berkner; and thus a controller means for controlling at least one of the outer shapes so that a parameter between the first and second outer shape and a parameter between the third and fourth outer shapes are to be different each other in correspondence with digital watermark information to be embedded because the watermark embedding and detecting taught by Brassil does not require recognition of the characters or words within the text lines, but rather their position on the document page and their relative position to one another. Bounding boxes (outer shape extractions) such as those taught by Berkner are beneficial because they improve grouping of text segments into lines of text, thus improving the identification of text lines regardless of font, document alignment and noise in the document image which Brassil

clearly identifies as issues associated with encoding and decoding information in a document image using line-shift coding (col. 10, lines 1-9).

Regarding claim 2, Brassil further discloses said control means changes at least one of positions of the first to fourth outer shapes (Fig. 7; col. 7, lines 38-45).

Regarding claim 3, Brassil further discloses said control means changes at least one of sizes of the first to fourth outer shapes (col. 5, lines 37-49, Brassil teaches changing the upward vertical endlines of letters. In view of the combination of Brassil and Berkner above it would have been obvious to one of ordinary skill in the art that changing the vertical endlines a character would result in a different size bounding box (outer shape).).

Regarding claim 6, Brassil discloses an apparatus for extracting data embedded in a document image (Fig. 3), comprising: extraction means for extracting a first line, a second line different from the first line, a third line and a fourth line, of characters in the document image (col. 4, line 57 – col. 5, line 19; Fig. 7; col. 7, lines 38-45; col. 9, lines 6-67); and extraction means for comparing a parameter between the first and second lines with a parameter between the third and the fourth lines, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image (col. 4, line 57 – col. 5, line 19; col. 7, lines 38-45; col. 9, lines 6-67).

Brassil teaches the spacing between lines can be measured using the baselines (col. 9, or the centroids of the lines (col. 9, lines 6-67), however Brassil does not explicitly disclose an

outer shape extracting means for extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; or an extraction means for comparing a parameter between the first and the second outer shapes with a parameter between the third and the fourth outer shapes, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image.

Berkner teaches segmenting text lines in a document and using bounding boxes (outer shape extractions) to measure the spacing between lines (page 6, paragraph 87).

The teachings of Brassil and Berkner are combinable because they are both concerned with image processing for formatting of document information. In view of the teachings of Berkner, it is evident that it is known in the art to calculate line spacing using bounding boxes (outer shape extractions) and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the data extracting apparatus taught by Brassil to include an outer shape extraction means for extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image in view of Berkner; and thus an extraction means for comparing a parameter between the first and the second outer shapes with a parameter between the third and the fourth outer shapes, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image because the watermark embedding and detecting taught by Brassil does not require recognition of the characters or words within the text lines, but rather their position on the document page and their relative position to one another. Bounding boxes (outer shape

extractions) such as those taught by Berkner are beneficial because they improve grouping of text segments into lines of text, thus improving the identification of text lines regardless of font, document alignment and noise in the document image which Brassil clearly identifies as issues associated with encoding and decoding information in a document image using line-shift coding (col. 10, lines 1-9).

Regarding claim 7, a method for embedding a digital watermark in a document image (col. 4, lines 30-32), comprising: an extraction step of extracting a first line, a second line different from the first line, a third line and a fourth line, of characters in the document image (col. 4, lines 30-56; Fig. 7; col. 7, lines 38-45); and a control step of controlling at least one of the lines so that a parameter between the first and second lines and a parameter between the third and fourth lines are to be different each other in correspondence with digital watermark information to be embedded (col. 4, lines 30-56; col. 7, lines 38-45, As taught by Brassil, the line shift coding results in the spacing (understood as a parameter) between lines 1 and 2 is greater than the spacing between lines 3 and 4.).

Brassil teaches the spacing between lines can be measured using the baselines (col. 9, or the centroids of the lines (col. 9, lines 6-67), however Brassil does not explicitly disclose an outer shape extracting step of extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; or a control step of controlling at least one of the outer shapes so that a parameter between the first

and second outer shape and a parameter between the third and fourth outer shapes are to be different each other in correspondence with digital watermark information to be embedded.

Berkner teaches segmenting text lines in a document and using bounding boxes (outer shape extractions) to measure the spacing between lines (page 6, paragraph 87).

The teachings of Brassil and Berkner are combinable because they are both concerned with image processing for formatting of document information. In view of the teachings of Berkner, it is evident that it is known in the art to calculate line spacing using bounding boxes (outer shape extractions) and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the watermark embedding method taught by Brassil to include an outer shape extraction step of extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image in view of Berkner; and thus a control step of controlling at least one of the outer shapes so that a parameter between the first and second outer shape and a parameter between the third and fourth outer shapes are to be different each other in correspondence with digital watermark information to be embedded because the watermark embedding and detecting taught by Brassil does not require recognition of the characters or words within the text lines, but rather their position on the document page and their relative position to one another. Bounding boxes (outer shape extractions) such as those taught by Berkner are beneficial because they improve grouping of text segments into lines of text, thus improving the identification of text lines regardless of font, document alignment and noise in the document image which Brassil

clearly identifies as issues associated with encoding and decoding information in a document image using line-shift coding (col. 10, lines 1-9).

Regarding claim 8, a method for extracting data embedded in a document image (col. 4, line 57-59), comprising: an extraction step of extracting a first line, a second line different from the first line, a third line and a fourth line, of characters in the document image (col. 4, line 57 – col. 5, line 19; Fig. 7; col. 7, lines 38-45; col. 9, lines 6-67); and an extraction step of comparing a parameter between the first and second lines with a parameter between the third and the fourth lines, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image (col. 4, line 57 – col. 5, line 19; col. 7, lines 38-45; col. 9, lines 6-67).

Brassil teaches the spacing between lines can be measured using the baselines (col. 9, or the centroids of the lines (col. 9, lines 6-67), however Brassil does not explicitly disclose an outer shape extracting step of extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image; or an extraction step of comparing a parameter between the first and the second outer shapes with a parameter between the third and the fourth outer shapes, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image.

Berkner teaches segmenting text lines in a document and using bounding boxes (outer shape extractions) to measure the spacing between lines (page 6, paragraph 87).

The teachings of Brassil and Berkner are combinable because they are both concerned with image processing for formatting of document information. In view of the teachings of Berkner, it is evident that it is known in the art to calculate line spacing using bounding boxes (outer shape extractions) and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the data extracting method taught by Brassil to include an outer shape extraction step of extracting outer shapes, which include a first outer shape in a first line, a second outer shape in a second line different from the first line, a third outer shape in a third line and a fourth outer shape in a fourth line, of characters in the document image in view of Berkner; and thus an extraction step of comparing a parameter between the first and the second outer shapes with a parameter between the third and the fourth outer shapes, and extracting data corresponding to a comparison result of the parameters as data embedded in the document image because the watermark embedding and detecting taught by Brassil does not require recognition of the characters or words within the text lines, but rather their position on the document page and their relative position to one another. Bounding boxes (outer shape extractions) such as those taught by Berkner are beneficial because they improve grouping of text segments into lines of text, thus improving the identification of text lines regardless of font, document alignment and noise in the document image which Brassil clearly identifies as issues associated with encoding and decoding information in a document image using line-shift coding (col. 10, lines 1-9).

Regarding claim 9, Brassil further discloses a program for making a computer execute a digital watermark embedding method (col. 4, lines 31-36).

Regarding claim 10, Brassil further discloses a program for making a computer execute a digital watermark extraction method (col. 4, lines 57-65).

Regarding claim 11, Berkner further discloses a computer-readable storage medium storing a program (page 3, paragraph 37).

Regarding claim 12, Berkner further discloses a computer-readable storage medium storing a program (page 3, paragraph 37).

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Additional Remarks

The lack of an art rejection for claims 4 and 5 with this Office action is not an indication of allowable subject matter. The disclosure/claimed language is such that it is impractical to conduct a reasonable search of the prior art by the Examiner.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,629,770 to Brassil et al. teaches a watermark embedding and detecting method and apparatus similar to that utilized in the prior art rejections above.

US 5,745,600 to Chen et al. teaches word spotting in text lines using bounding boxes.

US 5,761,686 to Bloomberg et al. teaches encoding information by varying the spacing between blocks used to simulate the appearance of text in an iconic version of a text document.

US 6,731,775 to Ancin teaches data watermark embedding and extraction for documents utilizing text pixels grouped together to form text lines and modifying the text layout to embed the message.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Mackowey whose telephone number is (571) 272-7425. The examiner can normally be reached on M-F 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bella Matthew can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AM
1/23/07

ANDREW W. JOHNS
PRIMARY EXAMINER